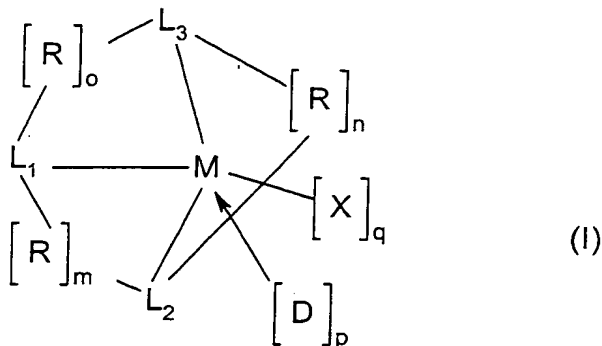


## Claims

1. Olefin polymerization catalyst component comprising an organometallic compound of general formula I



wherein:

**M** is a transition metal of groups 3, 4-10, lanthanide or actinide of the periodic table of the elements, preferably titanium, zirconium or hafnium;

each **R** is independently a structural bridge rigidly connecting two ligands **L**<sub>1</sub>, **L**<sub>2</sub> and **L**<sub>3</sub> and is constituted by 1 to 4 chain atoms selected from carbon, silicon, germanium, oxygen, boron;

**m**, **n** and **o** are 0 or 1, with the proviso that **m+n+o** is 2 or 3; ??

**L**<sub>1</sub> is a ligand of the cyclopentadienyl type or is isolobal to cyclopentadienyl, preferably a cyclopentadienyl, indenyl or fluorenyl ring, cyclopenteno[b]tiophenyl, cyclopenteno[b:b']-dithiophenyl, cyclopenteno[b]pyrrolyl, boratabenzene, phospholyl, dihydroindeno[b]indolyl, optionally substituted by one or more **R**<sup>1</sup> groups; most preferably a cyclopentadienyl, indenyl or fluorenyl ring, optionally substituted by one or more **R**<sup>1</sup> groups;

**L**<sub>2</sub> is a ligand of the cyclopentadienyl type or is isolobal to cyclopentadienyl, or a monovalent anionic ligand selected from the group consisting of N, P, B when **m+n** =2, it is selected from the group consisting of **NR**<sup>1</sup>, **PR**<sup>1</sup>, **BR**<sup>1</sup>, O and S when **m+n** =1;

**L**<sub>3</sub> is a monovalent anionic ligand selected from the group consisting of N, P, B when **n+o** =2, it is selected from the group consisting of **NR**<sup>1</sup>, **PR**<sup>1</sup>, **BR**<sup>1</sup>, O and S when **n+o** =1;

**R**<sup>1</sup> is hydrogen, C<sub>1</sub>-C<sub>20</sub> alkyl, C<sub>3</sub>-C<sub>20</sub> cycloalkyl, C<sub>6</sub>-C<sub>20</sub> aryl, C<sub>3</sub>-C<sub>20</sub> alkenyl, optionally comprising 1 to 5 heteroatoms such as Si, N, P, O, F, Cl, Br;

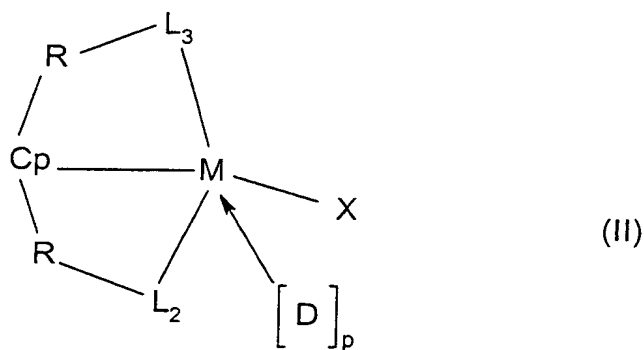
each X is independently selected from the group consisting of hydrogen, halogen,  $\text{NR}^2_2$ ,  $\text{R}^2$  with  $\text{R}^2$  equal to  $\text{C}_1\text{-C}_{20}$  alkyl,  $\text{C}_3\text{-C}_{20}$  cycloalkyl,  $\text{C}_6\text{-C}_{20}$  aryl,  $\text{C}_3\text{-C}_{20}$  alkenyl, optionally comprising 1 to 5 heteroatoms such as Si, N, P, O, F, Cl, Br;

q is a number whose value is: 0, 1, 2 or 3, depending on the valency of the metal M;

D is a neutral Lewis base,

p is a number whose value is: 0, 1, 2 or 3.

2. Catalyst component according to claim 1 wherein n is 0 and each R is independently selected from  $\text{CR}^1_2$ ,  $\text{SiR}^1_2$ ,  $\text{CR}^1_2\text{-CR}^1_2$ ,  $\text{CR}^1_2\text{-SiR}^1_2$ ,  $\text{SiR}^1_2\text{-SiR}^1_2$ ; wherein  $\text{R}^1$  is independently selected from hydrogen,  $\text{C}_1\text{-C}_{20}$  alkyl,  $\text{C}_3\text{-C}_{20}$  cycloalkyl,  $\text{C}_6\text{-C}_{20}$  aryl,  $\text{C}_3\text{-C}_{20}$  alkenyl, optionally comprising 1 to 5 heteroatoms such as Si, N, P, O, F, Cl, Br.
3. Catalyst component according to claim 1 wherein D is selected from the group consisting of linear or cyclic ethers, amines and phosphines.
4. Catalyst component according to claim 1 wherein the organometallic compound has formula (II)



wherein Cp is a cyclopentadienyl or indenyl ring, optionally substituted by one or more  $\text{R}^1$  groups, M is selected from Ti, Zr and Hf

each R is independently selected from  $\text{CR}^1_2$ ,  $\text{SiR}^1_2$ ,  $\text{CR}^1_2\text{-CR}^1_2$ ,  $\text{CR}^1_2\text{-SiR}^1_2$ ,  $\text{SiR}^1_2\text{-SiR}^1_2$ , wherein  $\text{R}^1$  is hydrogen,  $\text{C}_1\text{-C}_{20}$  alkyl,  $\text{C}_3\text{-C}_{20}$  cycloalkyl,  $\text{C}_6\text{-C}_{20}$  aryl,  $\text{C}_3\text{-C}_{20}$  alkenyl, optionally comprising 1 to 5 heteroatoms such as Si, N, P, O, F, Cl, Br.

$\text{L}_2$  and  $\text{L}_3$  are independently selected from the group consisting of  $\text{NR}^1$ ,  $\text{PR}^1$ ,  $\text{BR}^1$ , O and S;

112 <sup>2nd</sup> X is independently selected from the group consisting of hydrogen, halogen,  $\text{NR}_2$ ,  $\text{R}^2$  with  $\text{R}^2$  equal to  $\text{C}_1\text{-C}_{20}$  alkyl,  $\text{C}_3\text{-C}_{20}$  cycloalkyl,  $\text{C}_6\text{-C}_{20}$  aryl,  $\text{C}_3\text{-C}_{20}$  alkenyl, optionally comprising 1 to 5 heteroatoms such as Si, N, P, O, F, Cl, Br.

D is a neutral Lewis base;

5 p is a number whose value is: 0, 1, 2 or 3.

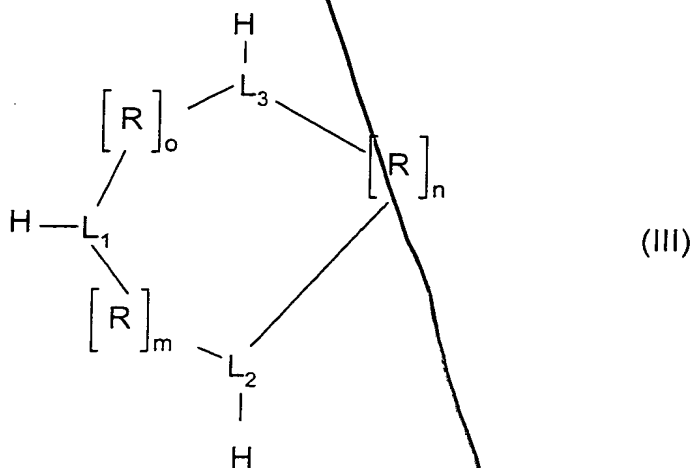
5. Catalyst component according to claim 1 wherein o is equal to 0.

6. Catalyst component according to claim 1 wherein at least one L group selected from  $\text{L}_1$ ,  $\text{L}_2$  and  $\text{L}_3$  and/or one R group contains a  $-\text{O-SiR}_3$  group.

10 <sup>1st</sup> <sub>(A)</sub> 7. Catalyst component comprising a compound according to claims 1-6 and a porous support.

8. Olefin polymerization catalyst comprising a catalyst component according to claims 1-7 and a cocatalyst selected from aluminoxanes and boron Lewis acids.

15 9. Process for the preparation of catalyst components according to claims 1-6 including reacting a compound of formula  $\text{MX}_{q+3}$  wherein M is a transition metal of groups 3, 4-10, lanthanide or actinide of the periodic table of the elements, X is a monovalent anionic ligand and q is 0, 1, 2, or 3 depending on the valence of the metal M, with a compound of formula III



*Alcont.*

each **R** is independently a structural bridge rigidly connecting  $L_1$ ,  $L_2$  and  $L_3$  and is constituted by 1 to 4 chain atoms selected from carbon, silicon, germanium, oxygen, boron; these atoms can be part of fused rings, aromatics rings or spiro rings;

**m**, **n** and **o** are 0 or 1, with the proviso that  $m+n+o$  is 2 or 3.

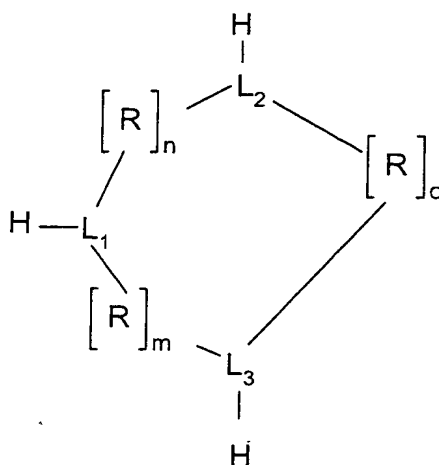
5  $L_1$  is a group of the cyclopentadienyl type or is isolobal to cyclopentadienyl, optionally substituted by one or more  $R^1$  groups;

$L_2$  is a group of the cyclopentadienyl type or is isolobal to cyclopentadienyl, or it is selected from the group consisting of N, P, B when  $m+n=2$ , it is selected from the group consisting of  $NR^1$ ,  $PR^1$ ,  $BR^1$ , O and S when  $m+n=1$ ;

10  $L_3$  is selected from the group consisting of N, P, B when  $n+o=2$ , it is selected from the group consisting of  $NR^1$ ,  $PR^1$ ,  $BR^1$ , O and S when  $n+o=1$ ;

$R^1$  is hydrogen,  $C_1$ - $C_{20}$  alkyl,  $C_3$ - $C_{20}$  cycloalkyl,  $C_6$ - $C_{20}$  aryl,  $C_3$ - $C_{20}$  alkenyl, optionally comprising 1 to 5 heteroatoms such as Si, N, P, O, F, Cl, Br.

15 10. Compounds formula III



(III)

wherein

each **R** is independently a structural bridge rigidly connecting  $L_1$ ,  $L_2$  and  $L_3$  and is constituted by 1 to 4 chain atoms selected from carbon, silicon, germanium, oxygen, boron; these atoms can be part of fused rings, aromatics rings or spiro rings;

**m**, **n** and **o** are 0 or 1, with the proviso that  $m+n+o$  is 2 or 3.

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$L_1$  is a group of the cyclopentadienyl type (or is isolobal) to cyclopentadienyl, optionally substituted by one or more  $R^1$  groups;

$L_2$  is a group of the cyclopentadienyl type (or is isolobal) to cyclopentadienyl, or it is selected from the group consisting of N, P, B when  $m+n=2$ , it is selected from the group consisting of  $NR^1$ ,  $PR^1$ ,  $BR^1$ , O and S when  $m+n=1$ ;

$L_3$  is selected from the group consisting of N, P, B when  $n+o=2$ , it is selected from the group consisting of  $NR^1$ ,  $PR^1$ ,  $BR^1$ , O and S when  $n+o=1$ ;

$R^1$  is hydrogen,  $C_1$ - $C_{20}$  alkyl,  $C_3$ - $C_{20}$  cycloalkyl,  $C_6$ - $C_{20}$  aryl,  $C_3$ - $C_{20}$  alkenyl, optionally comprising 1 to 5 heteroatoms such as Si, N, P, O, F, Cl, Br.

11. Process for the polymerization of olefins characterized by the use of a catalyst according to claim 8.
12. Polyolefins obtainable by the process of claim 11.

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